



KCM Kentucky Center for Mathematics



Considerations for Selecting a Primary Grades Supplemental Mathematics Diagnostic Intervention Program

Definition

A supplemental mathematics diagnostic intervention program is a research/evidence-based program that is used in conjunction with a core curriculum. The essential components of such a program include diagnostic assessments and data-driven differentiated instruction.

Purpose

*This document presents useful criteria for informal evaluation of a diagnostic intervention program and may be used as a general selection guide. This document is not designed to serve as a selection guide for specific intervention strategies. **We strongly recommend consulting with a mathematics education specialist when making any decisions regarding mathematics curricula.***

Program Foundations

1. To what extent is the program based on solid theories of teaching and learning which develop conceptual understanding of mathematics?
2. To which levels of the program does the research apply?
3. Are there randomized trial experiments that prove positive effects on student achievement?
4. To what extent do the program's theoretical framework, instructional design, and content development align with your school's current mathematics curriculum?

Professional Development

5. To what extent does the program provide rigorous professional development that contributes to a teacher's robust understanding of program framework, instructional technique, and use of materials?
6. To what extent does the professional development aid teachers' growth to conduct formative assessment by deliberately reflecting daily on practice and student performance?

7. To what extent does the professional development incorporate coaching visits?
8. To what extent does the professional development facilitate establishment of an engaged learning community?
9. To what extent does the professional development prepare teachers to guide student attainment of number sense, including verbal, symbolic, and quantitative aspects of number?
10. To what extent does the professional development support teachers in becoming primary mathematics education leaders within their schools?
11. To what extent does the professional development prepare teachers to advance student thinking from working with ones to performing mental computation using “chunks” of numbers?
12. To what extent does the professional development foster a sense of purpose and commitment to the instructional mission?
13. Does the professional development incorporate reading materials that provide teachers with rigorous exposure to current research in teaching and learning?
14. To what extent will teachers enjoy and engage in the professional development?
15. To what extent does the professional development align to the KDE Professional Development Standards?

Diagnostic and Formative Assessment

16. To what extent does the program prepare teachers to diagnose, with precision, a student’s level of readiness for learning early mathematics?
17. To what extent does the program provide systems for organizing student data for the purposes of instructional design and for anecdotal reporting of achievement progress?
18. To what extent does the program prepare teachers to fully utilize formative assessment to design data-driven instruction targeted at each student’s zone of proximal development?
19. To what extent do the formative assessment mechanisms allow a teacher to explore student progress in different domains of learning (i.e. conceptual/critical thinking as it relates to supporting procedural/skill performance)?

Instruction and Differentiation

20. To what extent does the program require that students engage in sustained hard thinking in order to construct foundational concepts that build facility with mathematical skills?
21. To what extent does the program allow students to experience and internalize the idea of *quantity* in a variety of settings presented by the teacher with a progression of diminishing support in order to guide thinking from concrete to abstract?

22. To what extent can the program be flexibly adapted to meet the instructional needs of students who are at a variety of readiness levels?
23. To what extent can the program be flexibly adapted to meet the optimal instructional pace of the individual?
24. To what extent does the program provide specific remediation strategies for recognizing and addressing common student misconceptions?
25. To what extent does the program encourage the development of students' abilities to communicate their mathematical ideas?
26. To what extent is the mathematical content appropriately focused (according to the National Council of Teachers of Mathematics *Focal Points*) to deepen foundational number sense and computational fluency/flexibility?
27. How can this program be used or expanded to accommodate all the tiers of intervention required in the federal requirements of RtI under IDEA 2004?
28. To what extent will teachers and students enjoy and engage in the teaching of this program?
29. To what extent are the student materials and technology user-friendly and developmentally appropriate?

Additional Considerations

30. What are the grade levels targeted by this program?
31. What is the cost of training? (KCM provides free Math Recovery or Number Worlds training for MAF grant recipients, one program per teacher per school.)
32. What is the cost of materials?
33. What materials and/or software are included in the cost?
34. What are the suggestions and costs for additional materials?
35. What is the recommended group size?
36. How can this program be used to benefit additional struggling primary students not directly served by the intervention teacher?
37. What is the recommended lesson length?
38. What is the total recommended pull-out time (missed regular class time) per student?
39. Since mathematics intervention is intended to be supplemental to the core program of study, is the mathematical content of the program aligned to a *subset* of the *Kentucky Core Content for Assessment*, *Kentucky Program of Studies*, and National Council of Teachers of Mathematics standards, rather than being an attempt to cover all topics?